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|--|-------------|----------------------|---------------------|------------------|
| 09/854,301   | 05/11/2001  | Daniel Marcu         | 06666-078001        | 7801             |
| 20985  | 7590        | 02/22/2006           | EXAMINER            |                  |
| FISH & RICHARDSON, PC<br>P.O. BOX 1022<br>MINNEAPOLIS, MN 55440-1022 |             |                      | SPOONER, LAMONT M   |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 2654                |                  |
| DATE MAILED: 02/22/2006  |             |                      |                     |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/854,301

Applicant(s)

MARCU ET AL.

Examiner

Lamont M. Spooner

Art Unit

2654

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12/09/05.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

|                              |                                      |                                    |  |
|------------------------------|--------------------------------------|------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>09/854,301 | <b>Applicant(s)</b><br>MARCU ET AL |  |
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- |  |   |
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| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed 12/9/05 have been fully considered but they are not persuasive.

In response to Applicant's arguments, p.19, "Claim 4 defines ... The algorithms for deriving ...are traditional bottom-up parsing... In contrast, the algorithm described in the disclosure is incremental. The embodiment describes left-to-right operations. The Examiner cannot concur. Marcu teaches, p.171, section 5.3, 5.3.1, left to right analysis.

In response to applicant's arguments, regarding 10 and 27, Marcu does not teach "a stack". The Examiner cannot concur. Marcu teaches, (ibid, p.110 para 4), "if a valid text structure can be associated with span [l,h], it must be built on top of the two substructures of two adjacent subspans", see Chap. 5, also sec. 5.5.

2. Applicant's arguments with respect to the claims (regarding amended automation/training, and dependent claims) have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:  

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
4. Claim 7 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject

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matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. More specifically, "...sufficient to derive the discourse tree of any input text, has virtually no limit with regard to text, and the Examiner cannot locate in the disclosure, how a discourse structure for "any" text", for example "The" or "T", can be derived.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The scope of, "...sufficient to derive the discourse tree of any input text, has virtually no limit with regard to text, and the Examiner cannot locate in the disclosure, how a discourse structure for "any" text", for example "The" or "T", can be derived.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1, 2, and 4-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marcu (The Rhetorical Parsing Summarization, and Generation of Natural Language Texts).

As per **claim 1**, Marcu teaches a computer-implemented method of determining discourse structures, the method comprising:

using the computer to automatically learn a set of one or more discourse parsing decision rules based on a training set (p.165-Fig. 5.1-"text T" as the training set", "1-17" as the rules, and corpus analysis results in algorithm, p.10 para. 2, p.161, para 1-Decision trees derived using machine learning techniques-algorithm); and

determining a discourse structure for an input text segment by applying the learned set of discourse parsing decision rules which has been automatically learned on the computer to the input text segment (p.9. para. 4 lines 3, 4, "the rhetorical parsing algorithm...").

However, Marcu explicitly teaches using corpus analysis results, with an automatic rhetorical parsing (p.9, p.10), therefore, for an automated system, it would have been obvious to combine the machine learning of parsing decision, and using that learned set with rhetorical parsing, in place of the manually generated analysis. The motivation for doing so would have been to not have a team of analyst to determine parsing decisions over a vast corpus when machine learning can perform this operation.

As per **claim 2**, Marcu teaches claim 1, and further teaches the training set comprises a plurality of annotated text segments (p. 18. para. 1, 2, section

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"2.1"-his brackets around text) and a plurality of elementary discourse units (EDUs) (ibid-the information between his brackets, his "clause like spans ... elementary units of text), each annotated text segment being associated with a set of EDUs (ibid, p. 18 para.1, 2-his "clause like spans" within the brackets thereby associated) that collectively represent the annotated text segment (ibid-p.20.Fig. 2.1-the collective annotated segment as the tree like discourse structure).

As per **claim 4**, Marcu teaches claim 2, and further teaches wherein generating the set of discourse parsing decision rules comprises iteratively performing one or more automatically learned operations (see claim 1) on a set of EDUs to incrementally build the annotated text segment associated with the set of EDUs (p.9 para. 1-2-"each cue phrase with ...the determination of the boundaries of the elementary textual units found in its vicinity" as building the annotated text segment-the elementary textual units within his "boundaries" making up the EDUs, p.171, section 5.3, 5.3.1).

As per **claim 5**, Marcu teaches claim 4, and further teaches wherein the one or more operations iteratively (p.110 para 4 his "algorithm" iterations as operations iteratively), perform comprise a shift operation and/or one or more reduce operations (p.110 para 4 "if a valid text structure can be associated with span [l,h], it must be built on top of the two substructures of two adjacent subspans"-the Examiner interprets the this step as a shift operation).

As per **claim 6**, Marcu teaches claim 5, and further teaches the reduce operations comprise one or more of the following six operations: reduce-ns,

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reduce-sn, reduce-nn, reduce-below-ns, reduce-below-sn, reduce- below-nn  
(p.20.the combination of his “With it’s distant orbit” and “-50 percent farther from the sun than earth” in his “elaboration” set, to “With its distant orbit-50 percent further from the sun than Earth.” as reduce ns operation).

As per **claim 8**, Marcu teaches claim 1, and further teaches wherein determining a discourse structure comprises incrementally building a discourse tree for the input text segment (p.125 Fig. 3.15), by carrying out automatically learned operations that identify elementary discourse units and operations that construct partial discourse trees (ibid, see claim 1 discussion on using machine learned..., and claim 4).

As per **claim 9**, Marcu teaches claim 8, and further teaches incrementally building a discourse tree for the input text segment comprises selectively combining elementary discourse trees (EDTs) (Fig. 3.15 “a” )into larger discourse tree units (p.125. Fig 3.15).

As per **claim 10**, Marcu teaches claim 8, and further teaches incrementally building a discourse tree for the input text segment comprises performing operations on a stack (p.110 para 4 “if a valid text structure can be associated with span [l,h], it must be built on top of the two substructures of two adjacent subspans”-the Examiner interprets this as stacking) and an input list of elementary discourse trees (EDTs) (Fig. 3.15.his “first, second, third, and fourth” discourse units as the input list of elementary discourse trees) , one EDT for each elementary discourse unit (EDU) in a set of EDUs corresponding to the input text segment (ibid).



As per **claim 11**, Marcu teaches claim 10, and further teaches prior to determining the discourse structure for the input text segment (p.123 para. 3 his “naturally occurring text” does not have the discourse structure yet, (3.112)), segmenting the input text segment into EDUs and inserting the EDUs into the input list (ibid, p.123 the information within his brackets as EDU's, p.125 Fig. 3.15- his “first, second, third, and fourth” discourse units as the input list of elementary discourse trees, wherein the Examiner interprets each unit as being inserted into an input list of EDU's to be used for determining the discourse structure for the input text segment)

As per **claim 12**, Marcu teaches claim 1, and claim 12 sets forth limitations similar to claims 10 and 11, and is thus rejected for the same reasons, Marcu further teaches wherein determining the discourse structure for the input text segment further comprises: segmenting the input text segment into elementary discourse units (EDUs) (see claim 11); incrementally building a discourse tree for the input text segment by performing operations on the EDUs to selectively combine the EDUs into larger discourse tree units (see claim 9); and repeating the incremental building of the discourse tree until all of the EDUs have been combined (p.125. his “Background, Joint, Elaboration “g)” of Fig. 3.15- single discourse tree as per claim 22).

As per **claim 13**, Marcu teaches claim 12, and further teaches wherein segmenting the input text segment into EDUs is performed by applying a set of automatically learned (learned implying predetermined as relating to claims 23 and 24, see claim 1) discourse segmenting decision rules to the input text

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segment (p. 7. paras 4, 5, "The automatic derivation of text structures", p.71, para 2, "...text structures can be automatically derived using constraint-satisfaction techniques." the "textual units" in para 2 interpreted as EDUs, p.76 para 4-p.77 para 1-"algorithm iterates over each non-elementary textual span [l,h] and builds a constraint C that captures...", interpreted as part of the automatic learned discourse segmented decision rules, see claim 1).

As per **claim 14**, Marcu teaches claim 13, and further sets forth limitations similar to claim 1, and thus is rejected for the same reasons.

As per **claim 15**, Marcu teaches claim 1, and further teaches wherein the input text segment comprises a clause, a sentence, a paragraph or a treatise (p.18. para 1, and section "2.1").

As per **claim 16**, claim 16 sets forth limitations similar to claim 1 and is thus rejected for the same reasons and under the same rationale. Marcu teaches a computer-implemented text parsing method comprising:

using the computer to automatically generate a set of one or more discourse segmenting decision rules based on a training set (p.165-Fig. 5.1-"text T" as the training set", "1-17" as the rules, p.10 para. 2, see claim 1); and

determining boundaries in an input text segment by applying the automatically learned set (see claim 1) of discourse segmenting decision rules to the input text segment (p.9 para. 1-2-"each cue phrase with ...the determination of the boundaries of the elementary textual units found in its vicinity" as building the annotated text segment-the elementary textual units within his "boundaries", p.171 section 5.3.1).

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As per **claim 17**, Marcu teaches claim 16, and further teaches wherein determining boundaries comprises examining each lexeme in the input text segment in order (p.37 his sequence of textual units as lexemes in order- p.38- p.39-his "leftmost position and rightmost position interpreted as boundaries, p.39 para. 1, p.171 section 5.3.1 his left to right "fashion").

As per **claim 18**, Marcu teaches claim 17, and further teaches assigning, for each lexeme, one of the following designations: sentence- break, EDU-break, start-parenthetical, end-parenthetical, and none p.171-174 his "actions").

As per **claim 19**, Marcu teaches claim 17, and further teaches wherein examining each lexeme in the input text segment comprises associating features with the lexeme based on surrounding context (ibid, ie p.174 "the action that the shallow analyzer should perform in order to determine the boundaries of the textual units found in it's vicinity").

As per **claim 20**, Marcu teaches claim 16, and further teaches wherein determining boundaries in the input text segment comprises recognizing sentence boundaries, elementary discourse unit (EDU) boundaries, parenthetical starts, and parenthetical ends (ibid, p.174 (5.10) brackets as EDU boundaries, p.172 last paragraph his boundaries of parenthetical units).

As per **claims 21 and 22**, claims 21 and 22 set forth limitations similar to claims 12 and are thus rejected for the same reasons and under the same rationale.

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As per **claims 23, 24 and 25**, claims 23, 24 and 25 set forth limitations similar to claims 13 and 2 and are thus rejected for the same reasons and under the same rationale.

As per **claim 26**, claim 26 sets for limitations similar to claims 6 and 2, and is thus rejected for the same reasons and under the same rationale.

As per **claim 27**, sets forth limitation similar to claims 9, 10, and 13 as described below and is thus rejected for the same reasons and under the same rationale:

- a plurality of automatically learned decision rules (see claim 13, see claim 1);

- an input list comprising a plurality of elementary discourse trees (EDTs), each EDT corresponding to an elementary discourse unit (EDU) of an input text segment (see claims 9 and 10);

- a stack for holding discourse tree segments while a discourse tree for the input text segment is being built (see claims 9 and 10); and

- a plurality of operators for which operate to automatically and incrementally build the discourse tree for the input text segment (p.9. p.10) by selectively combining the EDTs into a discourse tree segment according to the plurality of decision rules and moving the discourse tree segment onto the stack (see claims 9 and 10, -wherein building the trees, necessarily requires increment, not instantaneously built/construction).

As per **claim 28**, claim 28 sets for limitations similar to claim 11, and is thus rejected for the same reasons and under the same rationale.

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As per **claim 29**, claim 29 sets forth limitations similar to claims 1, 13 and 14, and is thus rejected for the same reasons and under the same rationale.

***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Magerman, Statistical Decision-Tree Models for Parsing, Proceedings of the 33<sup>rd</sup> annual meeting on Association for Computational Linguistics, ACL, pp. 276-283, 1995- teaches decision tree, and stacking operations.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**.

See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lamont M. Spooner whose telephone number is 571/272-7613. The examiner can normally be reached on 8:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on 571/272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**RICHEMOND DORVIL**  
**SUPERVISORY PATENT EXAMINER**

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2/18/06